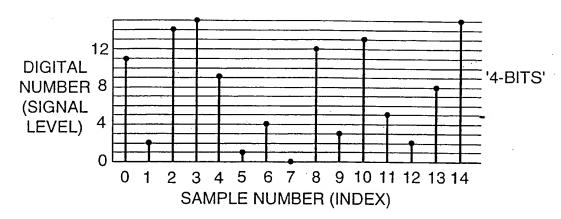
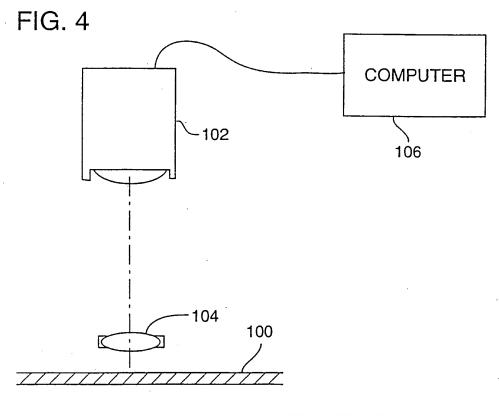
FIG. 1





■ EXPOSE AND STEP

FIG. 2

OBTAIN OR CREATE ORIGINAL DIGITAL SIGNAL OR IMAGE

)

ESTIMATE ROUGH OFFSET AND RMS NOISE

CHOOSE N OR N-BIT IDENTIFICATION WORD, E.G. 32

GENERATE N-BIT IDENTIFICATION WORD

GENERATE OR SYNTHESIZE N "RANDOM" INDEPENDENT SIGNALS WITH ROUGHLY GAUSSIAN DISTRIBUTION ABOUT SOME MEAN VALUE, WHERE SIGNALS HAVE EQUAL EXTENT AND DIGITAL SPACING OF ORIGINAL DIGITAL SIGNAL OR IMAGE

APPLY DIGITAL FILTER WHICH ATTENUATES BOTH LOW AND HIGH FREQUENCIES, LEAVING MIDDLE-RANGE FREQUENCIES LARGELY INTACT

CONDENSE N RANDOM SIGNALS TO A LOWEST ACCEPTABLE BIT VALUE IF MEMORY OR STORAGE SPACE IS AT A PREMIUM

ADD ALL RANDOM IMAGES TOGETHER WHICH HAVE A CORRESPONDING '1' IN THEIR ASSOCIATED BIT-PLACE-VALUE OF THE N-BIT IDENTIFICATION WORD, CALL THIS THE BASE COMPOSITE SIGNAL OR IMAGE

EXPERIMENT VISUALLY WITH GAIN AND GAMMA APPLIED TO BASE COMPOSITE SIGNAL OR IMAGE, ADDING THIS TO ORIGINAL DIGITAL SIGNAL OR IMAGE, AND DETERMINING THE ACCEPTABLE PERCEIVED NOISE LEVEL

APPLY FOUND GAIN AND GAMMA TO BASE COMPOSITE, ADD TO ORIGINAL, THEN CALL THIS THE DISTRIBUTABLE SIGNAL OR IMAGE

STORE AWAY AND SECURE ORIGINAL SIGNAL OR IMAGE, ALONG WITH N-BIT IDENTIFICATION WORD AND THEN RANDOM SIGNALS

SELL OR DISTRIBUTE THE DISTRIBUTABLE SIGNAL OR IMAGE

FIG. 3

OBTAIN DIGITAL OR NON-DIGITAL COPY OF SUSPECT SIGNAL OR IMAGE

DIGITIZE IF NOT ALREADY DIGITAL

CUT AND MASK PORTION OF SIGNAL OR IMAGE BELIEVED TO BE SUSPECT (ONLY IF ENTIRE SIGNAL OR IMAGE IS NOT SUSPECT)

PROCURE ORIGINAL DIGITAL SIGNAL OR IMAGE AND CUT AND MASK TO ROUGHLY THE SAME LOCATION OR SEQUENCE

VISUALLY RESCALE AND REGISTER THE CUT-OUT SUSPECT SIGNAL TO THE CUT-OUT ORIGINAL SIGNAL

RUN THROUGH SEARCH PROGRAM WITH MEAN SQUARED ERROR AS CRITERIA AND X OFFSET, Y OFFSET, AND SCALE AS THE THREE VARIABLES

APPLY X OFFSET, Y OFFSET, AND SCALE TO CUT-OUT SUSPECT, THEN RESAMPLE ONTO EXACT GRID AND CUT-OUT OF ORIGINAL SIGNAL

RUN THROUGH SEARCH PROGRAM WITH MEAN SQUARED ERROR AS CRITERIA AND DC OFFSET, GAIN, AND GAMMA AS THE THREE VARIABLES; APPLY TO SUSPECT

SUBTRACT ORIGINAL FROM SUSPECT, GIVING DIFFERENCE SIGNAL OR IMAGE

STEP THROUGH ALL N RANDOM INDEPENDENT SIGNALS, MASKED AS ORIGINAL AND CROSS-CORRELATED WITH DIFFERENCE SIGNAL IN IMMEDIATE NEIGHBORHOOD OF REGISTRATION POINTS

FIND 0 AND 1 LEVEL BY AVERAGING FIRST FOUR 0101 CODE VALUES

ASSIGN EITHER A 0 OR A 1 TO EACH CROSS-CORRELATION RESULT DEPENDING ON PROXIMITY TO THE AVERAGES OF PREVIOUS STEP

CHECK RESULT AGAINST SECURED IDENTIFICATION NUMBER

PROSECUTE IF IT MATCHES? OR AT LEAST SEND A NASTY LETTER DEMANDING RECOMPENSE

FIG. 5

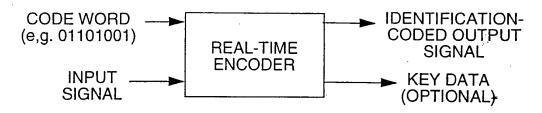
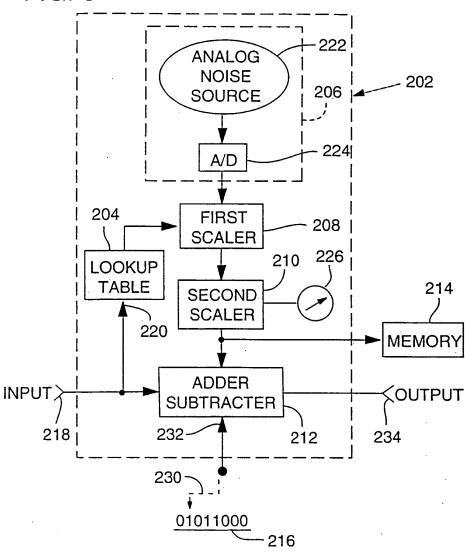
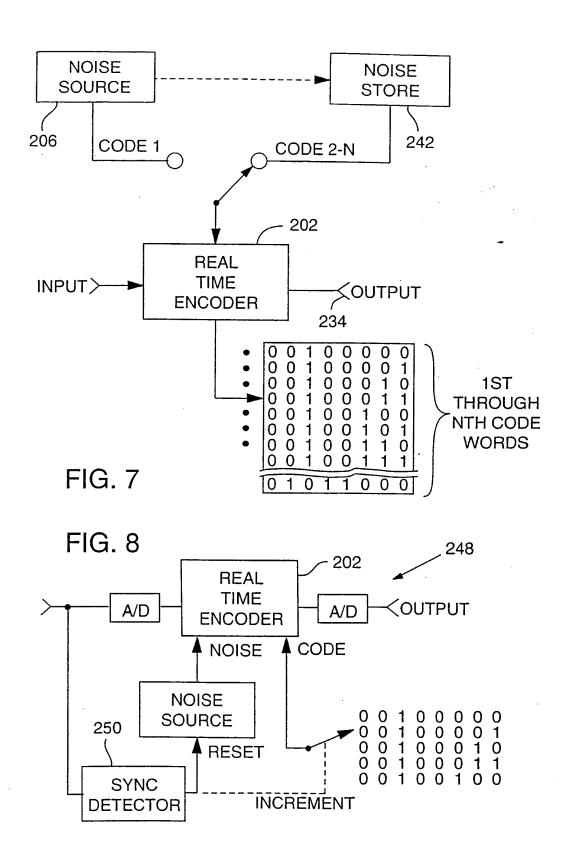
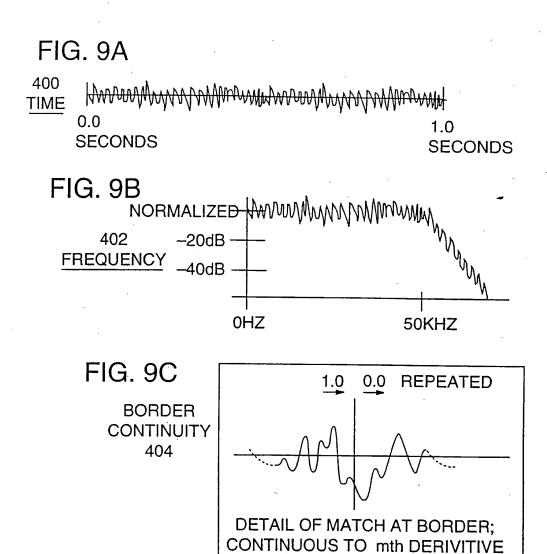


FIG. 6







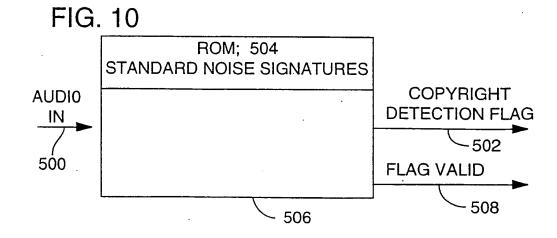
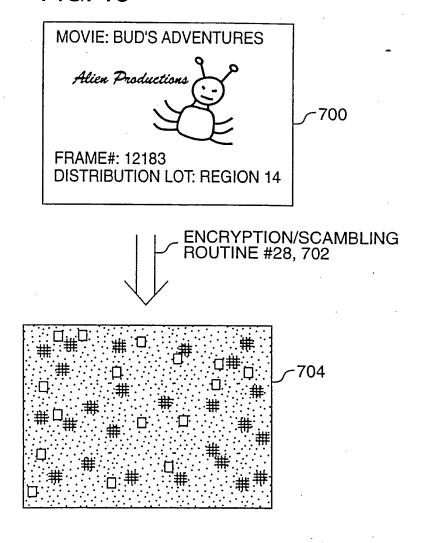
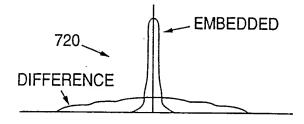


FIG. 13

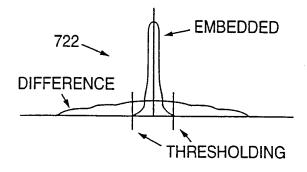


PSEUDO-RANDOM MASTER SNOWY IMAGE (SCALED DOWN AND ADDED TO FRAME 12183)

FIG. 14



MEAN-REMOVED HISTOGRAMS OF DIFFERENCE SIGNAL AND KNOWN EMBEDDED CODE SIGNAL



MEAN-REMOVED HISTOGRAMS OF FIRST DERIVATIVES (OR SCALER GRADIENTS IN CASE OF AN IMAGE)

			JOE'S IMAGE		JOE'S IMAGE		JOE'S IMAGE
802	01001010	AM	IOF'S IMAGE	JOE'S IMAGE	JOE'S IMAGE	JOE'S IMAGE	
•	00110101101101001010	DATA STREAM	JOE'S IMAGE	JOE'S IMAGE	JOE'S IMAGE	JOE'S IMAGE	
9	JOE'S IMAGE	HEADER	JOE'S IMAGE		JOE'S IMAGE JOE'S IMAGE	JOE'S IMAGE	
FIG. 16			JOE'S IMAGE		,		

JOE'S IMAGE

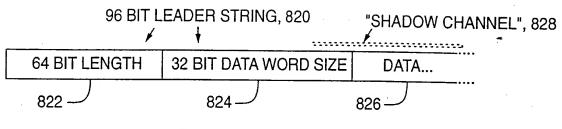
JOE'S IMAGE

JOE'S IMAGE

JOE'S IMAGE

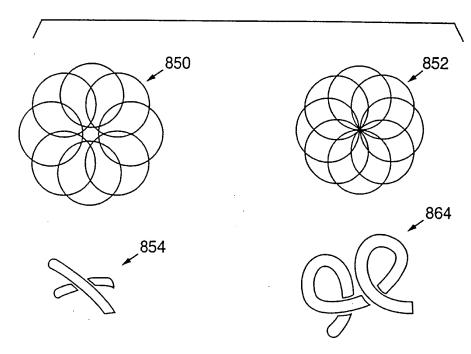
JOE'S IMAGE JOE'S IMAGE

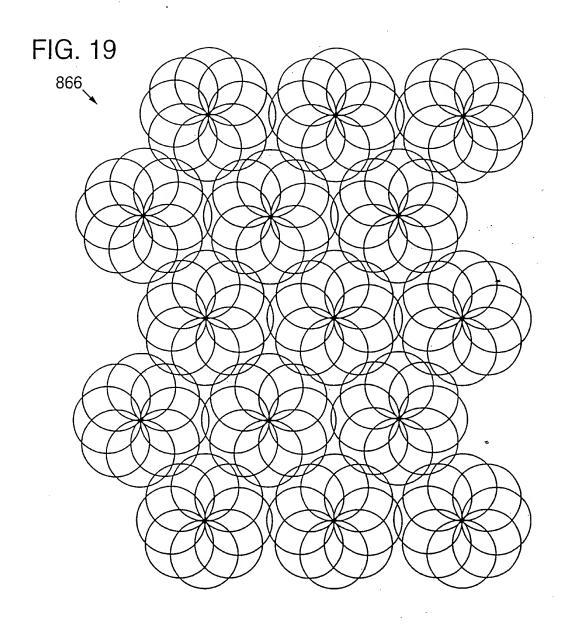
FIG. 17

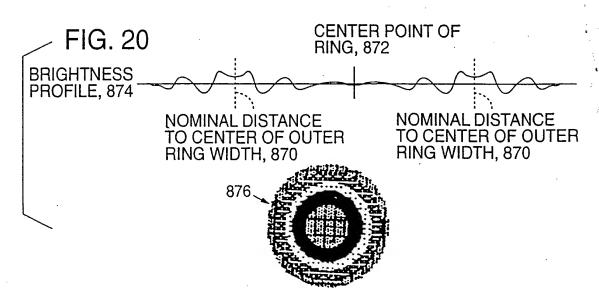


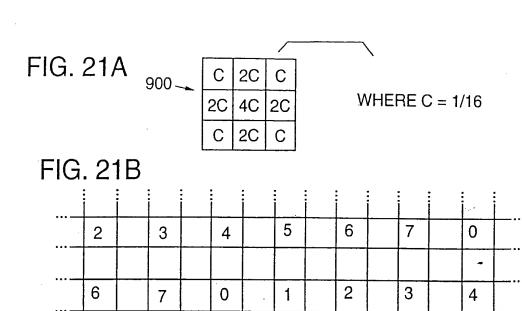
UNIVERSAL EMPIRICAL DATA FORMAT

FIG. 18









2C

4C

2C

1

C

2C

C

6

2

7

3

0

4

C

2C

С

4

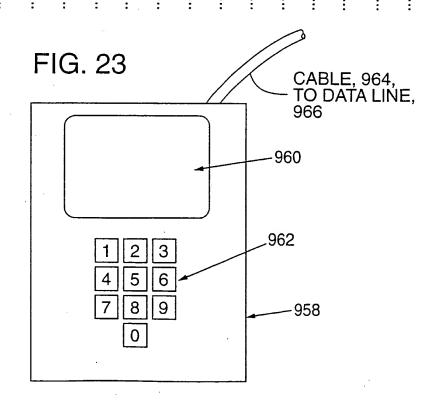
0

3

7

2

6



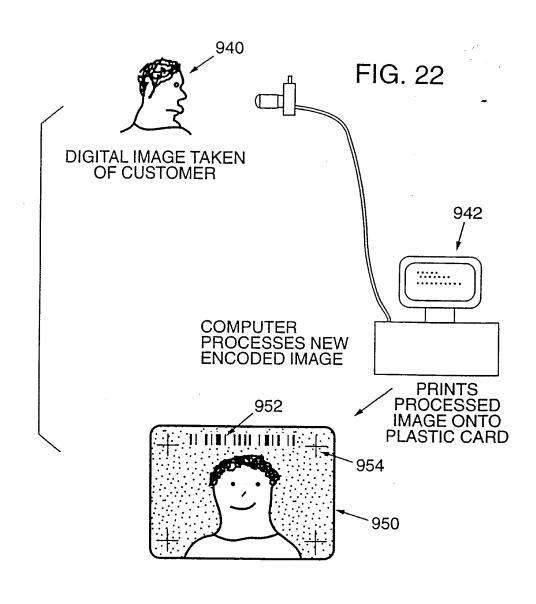
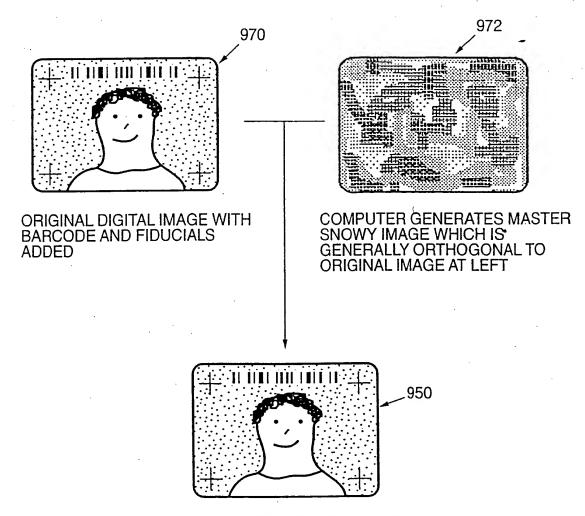


FIG. 24



COMBINED TO FORM PERSONAL CASH CARD

the design of the second secon

FIG. 25 TYPICAL TRANSACTION STEPS

- 1. READER SCANS IMAGE ON CARD, STORES IN MEMORY, EXTRACTS PERSON'S ID
 - . OPTIONAL: USER KEYS IN PIN NUMBER
- 3. READER CALLS CENTRAL ACCOUNT DATA NETWORK, HANDSHAKES
 - 4. READER SENDS ID, (PIN), MERCHANT INFORMATION, AND REQUESTED TRANSACTION AMOUNT TO CENTRAL NETWORK
- 5. CENTRAL NETWORK VERIFIES ID, PIN, MERCHANT INFO,
 - AND ACCOUNT BALANCE
- 6. IF OK, CENTRAL NETWORK GENERATES TWENTY-FOUR SETS OF SIXTEEN DISTINCT RANDOM NUMBERS,
 - WHERE THE RANDOM NUMBERS ARE INDEXES
- TO A SET OF 64K ORTHOGONAL SPATIAL PATTERNS
 - 7. CENTRAL NETWORK TRANSMITS FIRST OK, AND THE
 - SETS OF RANDOM NUMBERS
- 8. READER STEPS THROUGH THE TWENTY-FOUR SETS 8A. READER ADDS TOGETHER SET OF ORTHOGONAL
 - **PATTERNS**
- 8B. READER PERFORMS DOT PRODUCT OF RESULTANT PATTERN AND CARD SCAN,
- STORES RESULT 9. READER TRANSMITS THE TWENTY-FOUR DOT PRODUCT RESULTS TO CENTRAL NETWORK
- 10. CENTRAL NETWORK CHECKS RESULTS AGAINST MASTER
 11. CENTRAL NETWORK SENDS FINAL APPROVAL OR DENIAL
 12. CENTRAL NETWORK DEBITS MERCHANT ACCOUNT.
 - 12. CENTRAL NETWORK DEBITS MERCHANT ACCOUNT, CREDITS CARD ACCOUNT

